1145-03-1663 **Daniel M Roy*** (droy@utstat.toronto.edu), **Cameron E. Freer**, **Jeremy Avigad**, **Nathanael L. Ackerman** and **Jason M. Rute**. *Algorithmic barriers to representing conditional independence in sequences and arrays.*

We begin by formalizing a computational representation of conditional independence. In this terms, Freer and Roy (2012) shows that the conditional independence underlying exchangeable sequences is computable. Where it is efficiently computable is an open problem. We study exchangeable arrays, investigating the relative computability of exchangeable binary relational data when presented in terms of the distribution of an invariant measure on graphs, or as a graphon in either L1 or the cut distance. We establish basic computable equivalences, and show that L1 representations contain fundamentally more computable information than the other representations, but that 0' suffices to move between computable such representations. We show that 0' is necessary in general, but that in the case of random-free graphons, no oracle is necessary. We also provide an example of an L1-computable random-free graphon that is not weakly isomorphic to any graphon with an a.e. continuous version. (Received September 23, 2018)